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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/053,490	10/26/2001	Kobby Pick	10559-454001/P10771	3410
20985	7590	09/19/2005	EXAMINER	
FISH & RICHARDSON, PC 12390 EL CAMINO REAL SAN DIEGO, CA 92130-2081			PHU, PHUONG M	
			ART UNIT	PAPER NUMBER
			2631	

DATE MAILED: 09/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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<b>Office Action Summary</b>	Application No. 10/053,490	Applicant(s) PICK ET AL.	
	Examiner Phuong Phu	Art Unit 2631	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 03 August 2005.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 19-23 is/are allowed.
- 6) ☒ Claim(s) 1,3-14,16-18 and 24-28 is/are rejected.
- 7) ☒ Claim(s) 2 and 15 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

This Office Action is responsive to the Amendment filed on 8/3/05.

#### ***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 4-7 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 4 recites the limitation "the metric correction factor". This limitation is lack of antecedent basis.

Claim 5 recite the limitation "the log likelihood ratio". This limitation is lack of antecedent basis.

Claims, (if any) depended on above claim, are also rejected with the above reasons.

#### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 3-14, 16-18, 24-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gonzalez et al (2002/0181624), previously cited, in view of Sriram et al (6,754,251), newly-cited.

-Regarding to claim 1, see figure 2 and sections [0021-0048], Gonzalez et al discloses a method comprising:

step (12, 14, 16) of determining a normalization factor (outputted from (14)); and

step (16) of applying the normalization factor to an output (y) of a receiver (10).

Gonzalez et al does not disclose determining the normalization factor by using a variance of a multiple access interference.

However, Gonzalez et al teach that the normalization factor is determined by being based on an interference variance ( $\sigma^2$ ), and is silent on how in detail the  $\sigma^2$  is obtained.

Sriram et al teaches an interference variance (N) is obtained by basing on a variance of a multiple access interference (inter and intra-cell interference, and cross correlation among different PN sequences, or their shifts) (see col. 18, lines 16-19).

Therefore, for an application, it would have been obvious for one skilled in the art to implement Gonzalez et al in such a way that the interference variance ( $\sigma^2$ ) is obtained by basing on a variance of a multiple access interference, as taught by Sriram et al so that the normalization factor can be determined as required. So, with such the implementation, Gonzalez et al in view of Sriram et al teaches that determining the normalization factor by using a variance of a multiple access interference.

-Regarding to claim 3, Gonzalez et al discloses step (16, 18) of obtaining a metric correction factor (outputted from (18)) using the normalization factor (see figure 2).

-Regarding to claim 4, Gonzalez et al discloses step (18) of providing the metric correction factor to a channel decoder (20) (see figure 2 and section [0048]).

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-Regarding to claim 8, Gonzalez et al discloses that the receiver employing a detection (demodulator) to obtain the output of the receiver (see figure 2).

-Regarding to claim 9, see figure 2 and sections [0021-0048], Gonzalez et al discloses a system comprising:

a detector (demodulator, 10) which receives transmitted information and provides one or more output symbols based on the transmitted information;

a metric correction section (12, 14, 16, 18) which normalizes the one or more output symbols to obtain a metric (outputted from (12)); and

a channel decoder(18, 20) which receives the metric from the metric correction section, the channel decoder utilizing the metric to decode the transmitted information (see figure 2 and section [0048]).

Gonzalez et al does not disclose the normalization is carry out by basing on a variance of a multiple access interference.

However, Gonzalez et al teach that the normalization factor is determined by basing on an interference variance ( $\sigma^2$ ), and is silent on how in detail the  $\sigma^2$  is obtained.

Sriram et al teaches an interference variance (N) is obtained by basing on a variance of a multiple access interference (inter and intra-cell interference, and cross correlation among different PN sequences, or their shifts) (see col. 18, lines 16-19).

Therefore, for an application, it would have been obvious for one skilled in the art to implement Gonzalez et al in such a way that the interference variance ( $\sigma^2$ ) is obtained by basing on a variance of a multiple access interference, as taught by Sriram et al so that the normalization can be determined as required. So, with such the implementation, Gonzalez et al

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in view of Sriram et al teaches that the normalization is carry out by basing on a variance of a multiple access interference.

-Regarding to claims 10, 11 and 14, in Gonzalez et al, the detector inherently comprises a detector.

-Regarding to claim 12, Gonzalez et al discloses that the metric is based on a ratio (see equation 6).

-Regarding to claim 13, Gonzalez et al discloses that the metric correction section comprises means (14, 16) which determines a normalization factor (outputted from (14) to apply to the output symbols of the detector (see figure 2).

-Regarding to claims 5, 16, Gonzalez et al discloses step/means (12) determining an equivalent LLR as claimed (see section [0030] and equation (6)).

-Regarding to claims 6, 7, 17, 18, Gonzalez et al, in view of Sriram et al, discloses step/means of determining the variance of multiple access interference (see Sriram et al, col. 18, lines 16-19).

-Regarding to claim 24, see figure 2 and sections [0021-0048], Gonzalez et al discloses a method comprising:

step (10) of receiving an symbol;

step (12, 14) of determining a normalization factor for the symbol;

step (16) of normalizing the symbol with the normalization factor; and

step (18, 20) of providing the normalized symbol to a channel decoder (20).

Gonzalez et al does not disclose the normalization factor is determined by basing on a variance of a level of multiple access interference for the symbol.

However, Gonzalez et al teach that the normalization factor is determined by basing on an interference variance ( $\sigma^2$ ), and is silent on how in detail the  $\sigma^2$  is obtained.

Sriram et al teaches an interference variance (N) is obtained by basing on a variance of a level of multiple access interference (inter and intra-cell interference, and cross correlation among different PN sequences, or their shifts) (see col. 18, lines 16-19).

Therefore, for an application, it would have been obvious for one skilled in the art to implement Gonzalez et al in such a way that the interference variance ( $\sigma^2$ ) is obtained by basing on a variance of a level of multiple access interference, as taught by Sriram et al so that the normalization can be determined as required. So, with such the implementation, Gonzalez et al in view of Sriram et al teaches that the normalization factor is determined by basing on a variance of a level of multiple access interference for the symbol.

-Regarding to claim 25, Gonzalez et al in view Sriram et al discloses step of determining a time varying gain (outputted from (14) associated with a desired symbol (see Gonzalez et al, figure 2); and step (12) of determining the variance in the level multiple access interference for the symbol (see Gonzalez et al, figure 2, as being applied to claim 24 of being in view of Sriram et al).

-Regarding to claim 26, Gonzalez et al in view of Sriram et al teaches that determining the normalization factor further comprises determining the variance in a noise term (thermal noise) that is independent of the variance in the level of multiple access interference (see Sriram et al, col. 18, lines 16-19).

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-Regarding to claim 27, Gonzalez et al discloses that normalizing the symbol with the normalization factor comprises step (16) multiplying the symbol (outputted from (10) by a log likelihood ratio (outputted from (12, 14) (see figure 2).

-Claim 28 is rejected with similar reasons set forth for claims 5 and 16.

***Allowable Subject Matter***

5. Claims 19-23 are allowed.

6. Claims 2 and 15 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Response to Arguments***

7. Applicant's arguments filed on 8/3/05 have been fully considered but they are not, in part, persuasive.

-Claims 2, 15 and 19-23 are now indicated allowable as set forth above.

-Regarding to claims 1, 3-14, 16-18, 24-28, the applicant's arguments have been fully considered. However, the claims, after being amended or newly-added, are deemed not allowable because of reasons in the corresponding rejections to the claims, as set forth above.

***Conclusion***

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO**



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MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phuong Phu whose telephone number is 571-272-3009. The examiner can normally be reached on M-F (6:30-2:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad Ghayour can be reached on 571-272-3021. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

*Phuong phu*

Phuong Phu  
09/01/05

**PHUONG PHU**  
**PRIMARY EXAMINER**

Phuong Phu  
Primary Examiner  
Art Unit 2631